

WHAT IS CLAIMED IS:

1. Apparatus for manipulating a ribbon of material, said apparatus comprising:

a first mechanism for accepting the ribbon of material along an axis;

a second mechanism for rotating an end of the ribbon of material; and

a third mechanism for moving said second mechanism substantially parallel to the axis, said third mechanism configured to operate independently from the operation of said second mechanism.

2. Apparatus in accordance with Claim 1 wherein the ribbon has a helical shape having a plurality of triangular shaped facets.

3. Apparatus in accordance with Claim 2 wherein the plurality of facets are of similar size and shape.

4. Apparatus in accordance with Claim 1 wherein said third mechanism is configured to move said second mechanism through a first movement phase, the first movement phase including an initial speed, acceleration, deceleration, and an ending speed.

5. Apparatus in accordance with Claim 1 further comprising a second second mechanism such that said apparatus can rotate two strands of ribbon simultaneously.

6. Apparatus in accordance with Claim 1 wherein said second mechanism comprises a pair of jaws configured to engage the end of the ribbon.

7. Apparatus in accordance with Claim 1 wherein said first mechanism is configured to accept a metal ribbon.

8. Apparatus in accordance with Claim 1 further comprising a die positioned downstream of said second mechanism, said die configured to cut the ribbon.

9. Apparatus in accordance with Claim 1 wherein said second mechanism comprises at least one servo motor configured to rotate the ribbon.

10. Apparatus in accordance with Claim 1 wherein said third mechanism comprises a servo motor configured to move said second mechanism.

11. A method of fabricating a turbulator utilizing an apparatus, said method comprising:

engaging a first end of a ribbon of material with a spindle head;

moving the first end of the material along an axis, wherein the movement is performed in a first movement pattern; and

rotating the first end of the material about the axis, wherein the rotation is performed in a second movement pattern, wherein the first movement pattern is different from the second movement pattern.

12. A method in accordance with Claim 11 wherein the rotation is other than constant rotation.

13. A method in accordance with Claim 11 wherein the acceleration of the material in the first direction is different from the acceleration of the rotation of the material.

14. A method in accordance with Claim 11 further comprising:

cutting the ribbon to form a first cut end; and

feeding the first cut end to the second mechanism.

15. A method in accordance with Claim 14 further comprising cutting the ribbon to form a second cut end.

16. A method in accordance with Claim 15 further comprising releasing the cut, formed ribbon.

17. A method in accordance with Claim 11 further comprising providing the ribbon to the spindle head with the correct tension.

18. A method in accordance with Claim 11 wherein the spindle head includes a pair of jaws, said method further comprising engaging the ribbon with the pair of jaws.

19. A method in accordance with Claim 11 wherein the apparatus includes a first servo motor configured to provide axial movement to the material.

20. A method in accordance with Claim 19 wherein the apparatus includes a second servo motor configured to rotate the material.